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MS 1784 (2005) (English): CROP COMMODITIES – GOOD AGRICULTURAL PRACTICE (GAP)

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MALAYSIAN STANDARD

CROP COMMODITIES – GOOD AGRICULTURAL PRACTICE (GAP)

ICS: 65.020.20

Descriptors: sustainable crop production, best developed agricultural practices, food quality and safety, environmental protection, worker welfare and safety

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CONTENTS

		Page
	Committee representation	ii
	Foreword	iii
1	Scope	1
2	Normative references	1
3	Definitions	1
4	Requirements	2
4.1	Traceability	2
4.2	Record keeping and internal audit	2
4.3	Planting materials and rootstocks	3
4.4	Site history and site management	3
4.5	Soil and substrate management	4
4.6	Fertiliser management (organic and inorganic)	5
4.7	Irrigation and fertigation	6
4.8	Crop protection	7
4.9	Harvesting	9
4.10	Post-harvest handling	10
4.11	Pesticide residue analysis of produce	10
4.12	Waste and pollution management, recycling and re-use	11
4.13	Worker health, safety and welfare	11
4.14	Environmental issues	12
4.15	Record of complaint	12
5	Legal requirements	12
Bibliography		13

Committee representation

The Food and Agricultural Industry Standards Committee (ISC A) under whose authority this Malaysian Standard was developed, comprises representatives from the following organisations:

Department of Agriculture
Department of Standards Malaysia
Education and Research Association for Consumers Malaysia
Federal Agricultural Marketing Authority
Federation of Malaysian Manufacturers
Malaysian Agricultural Research and Development Institute
Malaysian Palm Oil Association
Ministry of Agriculture and Agro-based Industry
Ministry of Health
Ministry of International Trade and Industry
Universiti Putra Malaysia
Universiti Kebangsaan Malaysia

The Working Group on Good Agricultural Practice for Crop Commodities which developed this Malaysian Standard consists of representatives from the following organisations:

Cameron Highlands Floriculturists Association

Commercial Orchid Growers Association of Malaysia

Department of Agriculture Kuala Lumpur

Department of Agriculture Sabah

Department of Agriculture Sarawak

Federal Agricultural Marketing Authority

Golden Hope Research Centre

Malaysian Agricultural Research and Development Institute

Ministry of Agriculture and Agro-based Industry

Malaysian Rubber Board

Ministry of Health

Malaysian Herbal Corporation

Malaysian Palm Oil Association

Malaysian Palm Oil Board

Ministry of Primary Industries

National Association of Small Holders

Persekutuan Persatuan-persatuan Pekebun-pekebun Sayur-sayuran Malaysia

SIRIM Berhad (Secretariat)

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FOREWORD

This Malaysian Standard was developed by the Working Group on Good Agricultural Practice for Crop Commodities under the authority of the Food and Agricultural Industry Standards Committee.

This standard is intended to be used in certification schemes to recognise and certify farms which adopt Good Agricultural Practice (GAP) in Malaysia.

Compliance with a Malaysian Standard does not of itself confer immunity from legal obligations.

CROP COMMODITIES – GOOD AGRICULTURAL PRACTICE (GAP)

1. Scope

This Malaysian Standard prescribes a generic code of practice that defines essential elements for agricultural producers to promote Good Agricultural Practice (GAP) for sustainable crop production that is legally compliant, environmentally sound, socially acceptable and economically viable to ensure quality produce that is safe and suitable for utilisation and/or consumption.

2. Normative references

The following normative references are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the normative references (including any amendments) applies.

Malaysian Environment Quality Act 1974 and Environment Quality Regulations 1979

Malaysian Pesticide Act 1974

Malaysian Food Act 1983 and Food Regulations 1985

MS ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

3. Definitions

For the purposes of this standard, the following definitions apply.

3.1 Essential element

Critical, main or key factor.

3.2 Crop producers

Entities involved in commercial production of crops including individuals and companies.

3.3 Legally compliant

Adherence to all existing national legislation.

3.4 Socially acceptable

Meeting concerns on the welfare and safety of persons working or living in the farm.

3.5 Economically viable production

Production that gives positive returns on a sustainable basis.

3.6 Sustainable crop production

A holistic, systems-oriented approach to farming that is efficient in resource management and focuses on the interrelationship of social, economic and environmental processes. This approach is based upon environmentally sound, socially responsible and economically profitable practices.

3.7 Environmentally sound

Farm practices that do not have adverse effects on the environment, e.g. chemical pollution of water ways, effluent discharge.

3.8 Quality produce

Produce that is wholesome and safe for consumption and/or suitable for utilisation.

3.9 Pests

Organisms that are capable of causing injury and loss to crops. These organisms include insects, other invertebrates, fungi, bacteria, viruses, weeds and vertebrates.

3.10 Integrated Pest Management (IPM)

A management system that uses all suitable techniques and methods in a manner as compatible as possible to maintain pest population at levels below those causing economic injury.

4. Requirements

4.1 Traceability

The produce shall be traceable to the farm where it has been originally produced.

4.2 Record keeping and internal audit

4.2.1 Record keeping

Farms shall keep up-to-date records. All records shall be maintained and retained for at least six months unless stipulated by any specific legislation. Record keeping system shall be established in which all the essential elements are captured. The records shall be accessible and audited. All farm records shall be treated as confidential.

4.2.2 Internal audit

Internal audit shall be carried out at least once a year based on the requirements of this standard. It shall be completed and documented. Corrective actions need to be implemented and documented.

4.3 Planting materials and rootstocks

4.3.1 Choice of planting materials or rootstocks should meet requirements as agreed between crop producers and customers (e.g. taste, visual appearance, shelf-life, agronomic performance, environmental impact, minimal dependence on agrochemicals).

4.3.2 The use of genetically modified planting materials shall be avoided unless expressed permission has been given by the relevant authorities and should comply with existing regulations in the country of the final consumers.

4.3.3 The planting of genetically modified organism (GMO) shall be agreed between crop producers and customers before planting.

4.3.4 Seed quality should be known before use and a record of the variety name, variety purity, batch number and seed vendor should be kept. Where available, seed certification records should be retained.

4.3.5 Where grafted planting materials are used, records should also be kept of the variety of the rootstock.

4.3.6 Where protected varieties are used, the farm shall respect intellectual property right legislation on plant variety protection.

4.3.7 Varieties used for planting in the farm should preferably possess resistance or tolerance to major pests and diseases, so as to minimise utilisation of pesticide.

4.3.8 If seed treatments are carried out, the use of these treatments should be justified and shall be recorded.

4.4 Site history and site management

4.4.1 Site history

4.4.1.1 A recording system shall be established for the site history and the layout of fields of their crop history.

4.4.1.2 For all new agricultural sites, a risk assessment shall be carried out, taking the following into account:

a) prior use of the land;

b) potential impacts of the production on adjacent crops and areas; and

c) potential impact of activities carried out at adjacent areas.

The information of the risk assessment shall be recorded.

4.4.1.3 Farms shall not be located more than 1 000 m above sea level unless the land was developed prior to 1 January 2002.

4.4.1.4 Farms should not be located on steep slopes which may be detrimental to the environment.

4.4.2 Site management

4.4.2.1 The farm management shall demonstrate that it has legal rights to the cultivation of the land and all necessary regulatory approvals.

4.4.2.2 Where farms are located on sloping land (within the permissible level), appropriate soil conservation measures shall be undertaken to prevent soil erosion and silt deposition into drains, waterways, etc.

4.4.2.3 A visual identification or reference system for each field shall be established.

4.5 Soil and substrate management

4.5.1 Soil type mapping

Soil map should be prepared for the farm, which can then be used to plan rotations, planting and growing programmes.

4.5.2 Cultivation

Cultivation practices proven to improve or maintain soil structure and to avoid soil compaction should be followed.

4.5.3 Soil erosion

Field cultivation techniques that minimise soil erosion shall be adopted.

4.5.4 Soil fumigation

4.5.4.1 Where chemical fumigation of soils is carried out, it shall be justified and recorded.

4.5.4.2 Alternative methods such as crop rotation, planting of break crops, use of disease resistant cultivars, thermal or solar sterilisation, conversion to soil-free cultivation, and similar techniques shall be explored before resorting to use of chemical fumigants.

4.5.5 Substrates

4.5.5.1 Preference should be given to the use of organic substrates.

4.5.5.2 For inert substrates (e.g. perlite, rock wool, etc.), crop producers are encouraged to participate in substrate recycling programmes.

4.5.5.3 Where chemicals are used to sterilise substrates for re-use, records shall be kept and shall contain location of sterilised substrates. Steaming should be the preferred option of sterilisation.

4.5.5.4 Where chemicals are used to sterilise substrates for re-use, records of date, type of chemical used, method of sterilisation and name of operator shall be kept.

4.6 Fertiliser management (organic and inorganic)

4.6.1 Nutrient requirement

4.6.1.1 Soil care plan should be developed to ensure that nutrient loss is minimised.

4.6.1.2 The application of fertilisers should be based on nutrient levels of the soil or substrates and requirements of the crop.

4.6.2 Fertiliser utilisation

4.6.2.1 Usage of fertilisers should be in accordance with science based recommendations or best developed practice.

4.6.2.2 The type, quantity, method, timing and frequency of fertiliser application should be carefully observed so as to maximise benefits and minimise losses.

4.6.3 Records of application

All applications of soil and foliar fertilisers shall be recorded. Records shall include location, date of application, type and quantity of fertiliser applied, the method of application and name of operator.

4.6.4 Application machinery

Fertiliser application machinery shall be kept in good working condition.

4.6.5 Fertiliser source and storage

4.6.5.1 Fertiliser stock records shall be kept up-to-date and made available.

4.6.5.2 Fertilisers should not be stored in the same room with pesticides. If this is not possible, the fertilisers and the pesticides shall be physically separated and labelled accordingly.

4.6.5.3 Fertilisers shall be stored in a covered, clean, dry location where there is no risk of contamination of water sources.

4.6.5.4 Fertilisers shall not be stored with nursery stock.

4.6.5.5 Fertilisers shall not be stored with fresh produce.

4.6.5.6 All hazard and risk areas to human shall be clearly indicated.

4.6.5.7 Record of source and chemical content of fertiliser used shall be made available.

4.6.6 Organic fertiliser

4.6.6.1 Organic fertiliser should be stored in an appropriate manner to reduce the risk of contamination of the environment.

4.6.6.2 The use of untreated and treated human sewage sludge and pig waste are prohibited.

4.6.6.3 To avoid pollution by heavy metals or by nitrate leaching, analysis of levels of nutrients, heavy metals and other potential pollutants in the organic fertiliser, should be completed before application. Proper account shall also be taken of the nutrient contribution of organic fertilisers.

4.6.6.4 Organic fertilising in open field cultivation should be based on nutrient management plans.

4.6.6.5 Source of organic fertiliser used shall be recorded.

4.7 Irrigation and fertigation

4.7.1 Planning

Crop producers are recommended to base their irrigation or fertigation requirement on sound historical and scientific data.

4.7.2 Method

4.7.2.1 The most efficient and commercially practical water delivery system should be used to ensure the best utilisation of nutrient and water resources.

4.7.2.2 Consideration should be given to a water management plan to optimise water and nutrient usage and reduce wastage (e.g. systems for re-use, application at night, maintenance of equipment to reduce leakage, collection of rainwater, etc.).

4.7.2.3 All crop producers are encouraged to maintain records of irrigation and fertigation water usage.

4.7.3 Quality of water

4.7.3.1 Untreated sewage water is prohibited for use.

4.7.3.2 Based on risk assessments, water sources should be analysed at least once a year for microbial, chemical and mineral pollutants. The analysis results should adhere to the Malaysian Environment Quality Act 1974 and Environment Quality Regulations 1979 and adverse results acted upon.

4.7.4 Supply of water

Water should be derived from sustainable sources. Crop producers are encouraged to seek advice from relevant authorities on water sourcing.

4.8 Crop protection

4.8.1 Basic elements of crop protection

4.8.1.1 The use of pesticides to protect the crop shall be minimised.

4.8.1.2 Wherever possible, crop producers shall apply recognised Integrated Pest Management (IPM) techniques. Non-chemical control measures are preferred over chemical treatments.

4.8.1.3 Crop producers are encouraged to seek advice on IPM from competent authorities.

4.8.2 Choice of chemicals

4.8.2.1 The crop protection product utilised shall be appropriate for the control required.

4.8.2.2 Crop producers shall only use chemicals that are officially registered under the Malaysian Pesticide Act 1974, for use on the crop that is to be protected.

4.8.2.3 Selective products that are specific to the target pest and which have minimal effect on populations of beneficial organisms, aquatic life, workers and consumers and are not detrimental to the ozone layer should be used wherever possible.

4.8.2.4 Instructions on the label shall be followed to ensure effective application and to avoid risks to operators, consumers and the environment.

4.8.2.5 An anti-resistance strategy should be adopted to avoid reliance on any one chemical.

4.8.2.6 For crops to be exported, crop producers shall not use chemicals that are banned or disallowed in importing countries.

4.8.2.7 Crop producers should consult their customers to determine if any additional commercial restrictions exist.

4.8.3. Advice on pesticide usage

Crop producers are encouraged to seek advice on pesticide usage from competent authorities.

4.8.4 Records of application

All applications of pesticide shall include crop name, location and date of application, reason for application, trade name of pesticide used, dosage, method of application and name of operator.

4.8.5 Safety, training and instructions

4.8.5.1 Operators shall be trained on safe and proper use of pesticides.

4.8.5.2 Each area of application should be field marked with appropriate warning sign.

4.8.6 Personal clothing and equipment

4.8.6.1 Operators shall be equipped with suitable personal clothing and equipment appropriate to the danger posed to health and safety.

4.8.6.2 Personal clothing and equipment shall be cleaned after use and stored separately from pesticides.

4.8.7 Pre-harvest interval

Pre-harvest intervals as prescribed on pesticide labels shall be strictly adhered to.

4.8.8 Spray equipment

4.8.8.1 Spray equipment shall be suitable for use on crop and farm in question and shall be kept in good working condition. Calibration should be carried out as and when necessary to ensure accurate delivery of the required quantity of spray.

4.8.8.2 When mixing chemicals, the correct quantity of spray mix for the crop to be treated and the proposed treatment type shall be calculated, accurately prepared and recorded.

4.8.9 Disposal of surplus spray mix

Surplus spray mix and tank washings should be sprayed over an untreated part of the crop as long as the recommended dosage has not been exceeded or on designated fallow land. Records should be kept of such spraying.

4.8.10 Pesticide storage

4.8.10.1 Pesticides shall be stored in accordance with local regulations.

4.8.10.2 Pesticides shall be stored in a sound, secured, water resistant, well ventilated and well-lit location away from other materials.

4.8.10.3 All shelving should be of non-absorbent material.

4.8.10.4 The pesticide store shall be able to retain spillage (e.g. to prevent contamination of water courses).

4.8.10.5 There shall be adequate facilities for measuring and mixing pesticides.

4.8.10.6 There shall be emergency facilities (e.g. plenty of clean water, bucket of sand) to deal with contamination and accidental spillage.

4.8.10.7 Keys and access to the store shall be limited to workers with adequate training in the handling of pesticides.

4.8.10.8 A procedure to handle accidents, a list of contact telephone numbers and the location of the nearest telephone shall be available within the immediate vicinity of the store and next to the nearest telephone.

4.8.10.9 Inventory shall be kept and readily available.

4.8.10.10 All pesticides shall be stored in their original package.

4.8.10.11 Only chemicals registered for use on crops on the farm shall be stored.

4.8.10.12 Powders shall be stored on shelves above liquids or separately.

4.8.10.13 Warning signs of potential dangers shall be placed on access doors.

4.8.11 Empty pesticide containers

4.8.11.1 Empty pesticide containers shall not be re-used and the disposal of empty pesticide containers shall be in a manner that avoids exposure to humans and contamination of the environment.

4.8.11.2 Official collection and disposal systems should be used if available.

4.8.11.3 Empty containers shall be rinsed at least three times with water, and the washings returned to the spray tank.

4.8.11.4 Unless participating in established recycling programmes or with expressed permission from the authorities, rinsed containers shall be pierced to prevent re-use.

4.8.11.5 Empty containers shall be kept secure until disposal is possible.

4.8.11.6 Disposal or destruction of containers shall be in accordance to the Malaysian Pesticide Act 1974 and/or any other relevant local regulations.

4.8.12 Obsolete pesticides

Obsolete pesticides shall only be disposed through an approved chemical waste contractor.

4.9 Harvesting

4.9.1 Hygiene

4.9.1.1 Hygiene protocol for workers appropriate to a particular farm produce should be put in place in order to prevent physical, microbiological and chemical contamination.

4.9.1.2 Workers shall undergo training in basic hygiene and food safety before handling fresh produce. They shall be made aware of the requirement to notify management should they contract any transferable diseases, which may render them unfit to work in the vicinity of produce destined for human consumption.

4.9.1.3 Workers shall have access to clean toilet and washing facilities in the vicinity of their work.

4.9.2 Packaging on farm

4.9.2.1 Packaging material shall be stored to avoid contamination by physical and chemical hazards, as well as pests. It shall be protected from rodents, birds and other animals. Where produce is field packed, packaging shall not be left in the field overnight where risk of contamination exists.

4.9.2.2 Re-usable crates shall be cleaned to ensure that they are free from foreign materials which may be detrimental to the produce and/or consumers' health.

4.10 Post-harvest handling

4.10.1 Post-harvest treatment

4.10.1.1 Use of chemical post-harvest treatments should be minimised. When used, it shall be in accordance with product label or established recommendations.

4.10.1.2 When chemicals are used, they shall be in accordance with the relevant legislation including Malaysian Food Act 1983 and Food Regulations 1985. In addition, where pesticides are involved, they shall be officially registered under the Malaysian Pesticide Act 1974.

4.10.1.3 For crops to be exported, crop producers should not use chemicals that are banned or disallowed in importing countries.

4.10.1.4 Crop producers should consult their customers to determine if any additional commercial restrictions exist.

4.10.1.5 Crop producers should be able to demonstrate their competence and knowledge with regard to the post-harvest treatment.

4.10.1.6 Records for all post harvest treatments shall be kept to include crop name, location, date of treatment, reason for treatment, type of post harvest treatment, dosage, methods of treatment and name of operator.

4.10.2 Post-harvest washing

4.10.2.1 Potable water shall be used for washing of produce.

4.10.2.2 Based on risk assessments source of water for post harvest washing should be analysed at least once a year for microbial, chemical and mineral pollutants to ensure that it is potable.

4.11 Pesticide residue analysis of produce

4.11.1 The frequency of pesticide residue analysis shall be based on risk assessment taking into consideration its intended use.

4.11.2 Crop producers and/or suppliers shall provide evidence of residue testing.

4.11.3 The test results should be traceable to the crop producer and to the production site.

4.11.4 The laboratories used for residue testing shall be accredited by a competent accreditation authority to good laboratory standards (e.g. ISO/IEC 17025).

4.11.5 Preventive and corrective action plans shall be in place in the event a maximum residue level (MRL) is exceeded.

4.12 Waste and pollution management, recycling and re-use

4.12.1 All possible waste products and sources of pollution should be identified in all areas of the farm business.

4.12.2 Having identified wastes and pollutants, a plan should be developed and implemented, to avoid or reduce wastage and pollution. Whenever possible, avoid landfilling or burning, by recycling the waste. Crop debris may be composted and re-used for soil conditioning.

4.13 Worker health, safety and welfare

4.13.1 Action plan

There should be an action plan to promote safe and good working conditions.

4.13.2 Training

4.13.2.1 Training shall be given to workers operating dangerous or sophisticated equipment.

4.13.2.2 Records of training for each employee shall be kept.

4.13.2.4 Accident and emergency procedures shall be available with clear instructions to all workers. These procedures should be displayed and shall be in the appropriate language of the workforce.

4.13.3 Facilities and equipment

First aid boxes shall be available at permanent sites on the farm. Hazards should be clearly identified by warning signs where appropriate.

4.13.4 Pesticide handling

Workers undertaking pesticide applications on the farm should receive health checks in line with guidelines by local regulatory requirements.

4.13.5 Hygiene

4.13.5.1 All permanent product packing and storage sites shall have adequate pest control measures, particularly in areas for food handling, storage of packaging, storage of pesticides and storage of fertilisers.

4.13.5.2 Workers should receive basic training in hygiene requirements for the handling of fresh produce. The training program should outline the need for hand cleaning, the covering of skin cuts, and the confinement of smoking, eating and drinking to permitted areas.

4.13.5.3 The premises should be kept clean at all times to avoid establishing a breeding ground for pests.

4.13.6 Welfare

4.13.6.1 All employment conditions shall comply with local and national regulations.

4.13.6.2 If on-site living quarters are provided, they shall be habitable and have basic amenities and facilities.

4.14 Environmental issues

4.14.1 Impact of farming on the environment

Crop producers shall conform to existing environmental legislation. This covers the concern for air, water, soil, biodiversity and other environmental issues.

4.14.2 Wildlife and biodiversity conservation

4.14.2.1 Crop producers should always be conscious of the need to conserve wildlife and biodiversity.

4.14.2.2 Where Environmental Impact Assessment (EIA) is required, consideration for the conservation of wildlife and biodiversity shall include the following areas.

a) Conduct a baseline audit to understand existing animal and plant diversity on the farm. Conservation organisations may be requested to conduct surveys to measure biodiversity and identify areas of concern.

b) Take action to avoid damage and deterioration of habitats.

c) Create an action plan to enhance habitats and increase biodiversity on the farm.

4.14.3 Unproductive sites

Crop producers are encouraged to convert unproductive sites (e.g. swamps, steep slopes, deep peat etc) into conservation areas for natural flora and fauna.

4.15 Record of complaints

Records of complaints on all produce not in compliance with requirements in this standard and their remedial actions shall be made available on site.

5. Legal requirements

All farm activities and produce shall in all other aspects comply with the requirements of the legislations currently in force in Malaysia.

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